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DIVISION 05 - METALS

SECTION 05615

STOPLOGS

07/04

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SECTION 05615

STOPLOGS
07/04

PART 1 GENERAL

The equipment provided under this section shall be designed, fabricated, assembled, erected, and placed in proper operating condition in full conformity with the drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer unless exceptions are noted by the engineer.

Stop log panels shall be supplied with all the necessary parts and accessories indicated on the drawings, specified or otherwise required for a complete, properly operating installation, and shall be the latest standard product of a manufacturer regularly engaged in the production of stop logs.

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 36/A 36M	(1994) Carbon Structural Steel
ASTM A 153/A 153M	(1995) Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 242/A 242M	(1998) High-Strength Low-Alloy Structural Steel
ASTM A 307	(1997) Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength
ASTM A 320/A 320M	(1994a) Alloy Steel Bolting Materials for Low-Temperature Service
ASTM A 325	(1994) Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
ASTM A 325M	(1993) High-Strength Bolts for Structural Steel Joints (Metric)
ASTM A 490	(1997) Specification for Heat-Treated Steel Structural Bolts, 150 ksi Minimum Tensile Strength
ASTM A 490M	(1993) High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric)

ASTM A 529/A 529M	(1994) High-Strength Carbon-Manganese Steel of Structural Quality
ASTM A 572/A 572M	(1994c) High-Strength Low-Alloy Columbium-Vanadium Structural Steel
ASTM A 588/A 588M	(1994) High-Strength Low-Alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 in. (100 mm) Thick
ASTM B 221	(1995a) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
ASTM B 221M	(1995a) Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes (Metric)
ASTM B 308/B 308M	(1995a) Aluminum-Alloy 6061-T6 Standard Structural Shapes
ASTM D 395	(1989; R 1994) Rubber Property - Compression Set
ASTM D 412	(1992) Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers - Tension
ASTM D 413	(1982; R 1993) Rubber Property - Adhesion to Flexible Substrate
ASTM D 471	(1995) Rubber Property - Effect of Liquids
ASTM D 572	(1988; R 1994) Rubber - Deterioration by Heat and Oxygen
ASTM D 2240	(1995) Rubber Property - Durometer Hardness

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Welding; FIO

Schedules of welding procedures for structural steel and welding processes for aluminum shall be submitted as specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

Materials; FIO

Materials orders, materials lists and materials shipping bills shall be submitted as specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

Materials Disposition Records; FIO

A system of identification which shows the disposition of specific lots of approved materials and fabricated items in the work shall be established and submitted before completion of the contract.

SD-04 Drawings

Detail Drawings; GA

Detail drawings shall be submitted as specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

SD-06 Instructions

Operation and Maintenance Manuals; FIO

Submit O&M Manuals for stoplog panels before completion of the contract.

SD-09 Reports

Tests, Inspections, and Verifications; FIO

Certified test reports for material tests shall be submitted with all materials delivered to the site.

1.3 PAYMENT

The Contractor shall be responsible for the work of this section, without any direct compensation being made other than the payment received for contract items.

1.4 QUALITY ASSURANCE

The manufacturer shall have experience in the production of substantially similar equipment and shall show evidence of satisfactory operation in at least 50 installations. The manufacturer's shop welds, welding procedures and welders shall be qualified and certified in accordance with the requirements of the latest edition of ASME, Section IX.

The fully assembled stop log panels shall be shop inspected before shipping.

1.5 QUALIFICATION OF WELDERS AND WELDING OPERATORS

Qualification of welders and welding operators shall conform to the requirements of Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.6 DELIVERY, STORAGE AND HANDLING

Delivery, handling and storage of materials and fabricated items shall conform to the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

1.6.1 Rubber Seals

Rubber seals shall be stored in a place which permits free circulation of

air, maintains a temperature of 70 degrees F or less, and prevents the rubber from being exposed to the direct rays of the sun. Rubber seals shall be kept free of oils, grease, and other materials which would deteriorate the rubber. Rubber seals shall not be distorted during handling.

1.7 PERFORMANCE

1.7.1 Leakage

Stop log panels shall be substantially watertight under the design head conditions. Leakage shall not exceed 0.1 US gallon per minute per foot of periphery for the rated seating head.

1.7.2 Design Head

Unless specified otherwise, the design head shall be equal to the total height from the stop log panel sill to the top of structure (gatewell).

PART 2 PRODUCTS

2.1 DISCHARGE CHAMBER/GATED OUTLET STOPLOG PANELS

2.1.1 General Design

Design discharge chamber/gated outlet stoplog panels according to EM-1110-2-2105. Design discharge chamber/gated outlet stoplog panels and guides for unseating head conditions using maximum head conditions (Gatewell top of concrete - invert)(see schedule). Discharge chamber/gated outlet stoplog panels shall be constructed entirely of stainless steel. If design results in fracture critical members appropriate AWS code must be followed and all required non-destructive testing reports must be submitted for Government approval. FCM requirements are as follows: Welding procedures must be qualified by AWS (in this case D1.6), Welders and welding operators must be qualified (AWS D1.6), Welds must be tested and accepted according to AWS D1.6. Material must meet toughness requirements. Charpy V-notch impact test results and material certifications for base and weld metals are required. Test procedures shall follow ASTM A 370, ASTM A 673/A 673M. Base metal toughness requirements shall satisfy Table S1.3 of ASTM A 709/A 709M. Zone 2 requirements are acceptable for this application. Weld metal toughness shall meet the requirements identified in AWS D1.5, Table 12.1. All hardware shall be stainless steel. The seal detail provided in the contract drawings shall be followed for the sides. The Contractor shall design the top and bottom seals.

2.1.2 Frame

The frames shall be made of stainless steel built up sections or hot dipped galvanized wide flanged beams. The frame shall be suitable for casting into the wall or mounting on a concrete wall, embedded in channel, or installed inside an existing channel as shown on the contract drawings for each location. If fracture critical members result in the design, the same NDT requirements as described in the general design criteria apply.

2.1.3 Stoplog Panel

The stoplog panel shall consist of a flat plate reinforced with formed plate or or structural members to limit their deflection to 1/360 of the gate's span unger the design head. Each end of the panel shall have

UHMWPE (Ultra high molecular weight polyethylene) guide block to ensure proper alignment of the panel, to reduce friction, and to prevent metal-to-metal contact. Permanently mark design head on each stoplog panel by welding in an appropriate location as approved by the COR.

2.1.4 Seals

Seals shall be made of ethylene-propylene-diene-monomer (EPDM) rubber. The end seals shall be attached to the stoplog panel by means of a UHMWPE guide block. The bottom seal is attacheed to the stoplog panel with a stainless steel retainer.

2.1.5 Materials

Part	Material
Frame, log, reinforcements, and bottom seal retainer	Stainless Steel ASTM A-240, Type 304L or 316L
Guide	Ultra high molecular weight polyethylene (UHMWPE), ASTM D-4020
Seal	EPDM ASTM D-2000
Fasteners	ASTM F593, F594 GR-1 for type 304 or GR-2 for type 316

2.1.6 Stoplog Panel Schedule

TABLE 1. GATE REQUIREMENTS

Gatewell Location (Dwg. Ref.)	Pipe Size* (Inches)	Number of Panels	Seating Head Max. (Ft Water)	Unseating Head Max. (Ft Water)
L15 Gatewell (64/1223-1224)	54	1	33	33
L16 Gatewell (64/1225-1226)	72	2	33	33

* Pipe diameter over which panel is to be installed. This is the minimum clear opening diameter. The panel dimensions will be larger to provide engagement with the guides and seals.

2.2 FABRICATION

2.2.1 Detail Drawings

Detail drawings of stoplogs and appurtenant shop fabricated items, including fabrication drawings, shop assembly drawings, delivery drawings,

and field installation drawings, shall conform to the requirements specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.2.1.1 Fabrication Drawings

Fabrication drawings shall show complete details of materials, tolerances, connections, and proposed welding sequences which clearly differentiate shop welds and field welds.

2.2.1.2 Shop Assembly Drawings

Shop assembly drawings shall provide details for connecting the adjoining fabricated components in the shop to assure satisfactory field installation.

2.2.1.3 Delivery Drawings

Delivery drawings shall provide descriptions of methods of delivering components to the site, including details for supporting fabricated components during shipping to prevent distortion or other damages.

2.2.1.4 Field Installation Drawings

Field installation drawings shall provide a detailed description of the field installation procedures. The description shall include the location and method of support of installation and handling equipment; provisions to be taken to protect concrete and other work during installation; method of maintaining components in correct alignment; and methods for installing appurtenant items.

2.2.2 Structural Fabrication

Structural fabrication shall conform to the requirements specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.2.3 Welding

Welding shall conform to the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS. Stoplog assemblies are considered Fracture Critical Members (FCM). Welds and materials are to meet requirements of AWS D1.5.

2.2.4 Bolted Connections

Bolted connections shall conform to the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.2.5 Machine Work

Machine work shall conform to the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.2.6 Miscellaneous Provisions

Miscellaneous provisions for fabrication shall conform to the requirements specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

2.3 TESTS, INSPECTIONS, AND VERIFICATIONS

Tests, inspections, and verifications for materials shall conform to the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

PART 3 EXECUTION

3.1 INSTALLATION

Discharge chamber/gated outlet stoplog panels and appurtenances shall be handled and installed in accordance with the manufacturer's recommendations or Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS, whichever is more restrictive. Installation of structure stoplog panels shall conform to the requirements specified and in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

3.1.1 Embedded Metals

Corner protection angles, frames, base plates, and other embedded metal items required for complete installation shall be accurately installed to the alignment and grade required to ensure accurate fitting and matching of components. Anchors for embedded metals shall be installed as shown. Items requiring two concrete pours for installation shall be attached to the embedded anchors after the initial pour, adjusted to the proper alignment, and concreted in place with the second pour. Pump anchors shall be post installed using epoxy.

3.1.2 Seal Assemblies

Rubber seal assemblies shall be installed after the embedded metal components have been concreted in place and the gate installation, including painting, completed. Rubber seals shall be fastened securely to metal retainers. Before operating the gates, a suitable lubricant shall be applied to the rubber seal rubbing plates to protect the rubber.

3.2 PROTECTION OF FINISHED WORK

Protection of finished work shall conform to the requirements specified in Section 05055 METALWORK FABRICATION, MACHINE WORK, MISCELLANEOUS PROVISIONS.

3.3 ACCEPTANCE TRIAL OPERATION

After completion of installation, the Contracting Officer will examine the stoplog installation for final acceptance. The individual components of the stoplog installation will be examined first to determine whether or not the workmanship conforms to the specification requirements. The Contractor will be required to place the stoplogs in the guides a sufficient number of times to demonstrate that the stoplogs fit properly and seat uniformly. Required repairs or replacements to correct defects, shall be made at no cost to the Government. The trial operation shall be repeated after defects are corrected.

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